

III. REMARKS

Claims 1-18 are pending in this application. By this Amendment, claims 1 and 9 have been amended, claims 2 and 8 have been cancelled, and claim 18 has been added. Claims 10-17 were previously withdrawn from consideration. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Applicants do not acquiesce in the correctness of the rejections or objections and reserve the right to present specific arguments regarding any rejected or objected-to claims not specifically addressed. Further, Applicants reserve the right to pursue the full scope of the subject matter of the claims in a subsequent patent application that claims priority to the instant application.

In the Office Action, claims 1-9 are rejected under 35 USC 103(a) as allegedly being unpatentable over Lee, Ramsay et al., Bertrand et al., Chung et al. and Jang et al. Specifically, the Office alleges, inter alia, that Lee, Ramsay et al., and Bertrand et al. each teach the production of polyhydroxyalkanoates with a microorganism using xylose as the main carbon source and that Chung et al. and Jang et al. each teach the production of the 3HB-co-3HV polyhydroxyalkanoate copolymer using glucose as a primary carbon source and levulinic acid as a secondary carbon source. The Office therefore concludes that it would have been obvious to add levulinic acid as taught by Chung et al. or Jang et al. to the cultures of Lee, Ramsay et al., or Bertrand et al. in order to produce the 3HB-co-3HV polyhydroxyalkanoate copolymer.

Applicants respectfully assert, however, that the Office has failed to establish a case of prima facie obviousness under 35 USC 103(a).

"To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

First, Applicants note that neither Chung et al. nor Jang et al. teach or suggest the use of xylose as a primary carbon source. Chung et al. mention several sugars (glucose, sucrose, and sorbitol) as possible carbon sources for the production of the 3HB-co-3HV copolymer using levulinic acid as a secondary carbon source. Jang et al. only mention the use of glucose to produce the copolymer. Applicants assert that the relatively small number of primary carbon sources identified by Chung et al. and Jang et al. as suitable for use with levulinic acid is telling; it was not believed by Chung et al. or Jang et al. that the copolymer could be produced with other primary carbon sources. As noted by Bertrand et al., not all sugars are suitable carbon sources (see, e.g., Bertrand et al. at 3136, discussing the unsuitability of lactose as a carbon source).

The Office concedes that neither Lee, Ramsay et al., nor Bertrand et al. teach the use of levulinic acid as a cosubstrate for the production of the copolymer. Accordingly, none of the cited references provides the suggestion or motivation to combine or modify the teachings of any other cited reference and the Office fails to provide any such reason. In addition, given the respective teachings of each of the cited references, Applicants assert that such a suggestion or motivation to combine or modify the teachings of the cited references cannot be found in the knowledge of one having ordinary skill in the art.

Second, Applicants assert that, as amended, none of the pending claims is obvious in view of any combination of the cited references. Claim 1, from which all non-withdrawn claims depend, has been amended to include the limitation that a second, larger quantity of levulinic acid is added between about 16 hours and about 24 hours after the addition of a first, smaller quantity of levulinic acid. None of the cited references teaches or suggests a second, larger addition of levulinic acid. In fact, Chung et al., the only cited reference to teach multiple additions of levulinic acid, describe multiple additions as “the intermittent supplement of a *fixed* amount of [levulinic acid] to maintain its concentration at a low level.” Chung et al. at 81 (emphasis added).

Thus, for each of the reasons above, Applicants respectfully assert that none of the rejected claims is obvious in view of any combination of Lee, Ramsay et al., Bertrand et al., Chung et al., or Jang et al. Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of the application.

In view of the foregoing, Applicants respectfully request withdrawal of the rejection and objections and allowance of the application. Should the Examiner require anything further from Applicants, the Examiner is invited to contact Applicants’ undersigned representative at the number listed below.

Respectfully submitted,
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